REMARKS

Claim 1 has been amended to incorporate subject matter from claim 6, wherein the combine harvester includes "a threshing, cleaning and separation system." Claim 6 has been amended in accordance the amendment to claim 1.

The present amendment adds no new matter to the instant application, and raises no new issues.

The Invention

The present invention pertains broadly to combine harvesters having a fully electronic engine for optimizing fuel consumption depending upon the operating state of the combine. More specifically, the present invention is directed to a combine harvester, including a threshing, cleaning and separation system, and comprising: (a) wheels for propelling the combine harvester over the ground; (b) an engine driving said wheels via a hydrostatic drive system of a transmission, wherein the transmission includes a gear select lever for changing a gear ratio of the transmission; (c) a manually operable throttle control switch having a plurality of positions, each position corresponding to a desired engine speed level; (d) a speed modification switch having a first state and a second state, wherein movement of the gear select lever from a first position to a second position switches the speed modification switch from the first state to the second state and changes the gear ratio; and (e) an engine control circuit for controlling the speed of said engine, wherein the engine control circuit is connected to receive input from the throttle control switch and the speed modification switch; the engine control circuit being responsive to input from said throttle control switch and said speed modification switch for selectively controlling said

engine to run at a first speed for a given position of said throttle control when said speed modification switch is in said first state and to run at a second speed higher than said first speed when said throttle control is in said given position and said speed modification switch is in said second state.

Various other embodiments in accordance with the present invention are described in the dependent claims. The main advantage of the embodiments in accordance with the present invention is that a combine harvester is provided having an engine speed control system that avoids power overload of harvester components (i.e., a threshing, cleaning and separation system for processing a cut crop material) and that yields optimal fuel efficiency when harvesting a crop and when operating at higher engine speeds for propelling the harvester on a roadway.

The Rejections

Claims 1 stands rejected under 35 U.S.C. 102(b) as anticipated by Ushiro et al. (U.S. Patent 4,953,427). Claims 2-6 stand rejected under 35 U.S.C. 103(a) as unpatentable over Ushiro et al. in view of Cornell et al. (U.S. Patent 4,663,713).

Applicant respectfully traverses the rejection and requests reconsideration of the application for the following reasons.

Applicant's Arguments

The Ushiro et al. reference discloses a "vehicle speed control system" that is applied to a "tractor" as shown in Figure 1, wherein the vehicle speed control system, as shown in Figure 3 or 4, has (a) a foot pedal (24) mechanically connected to a hydrostatic

transmission (11), which is mechanically connected to a speed governor (17) that controls the rotational rate of the engine (1), (b) a hand accelerator lever (21) mechanically connected to the speed governor (17), and (c) an auxiliary change speed lever (25) that has an output shaft (13) operatively connected through differential (14) to the rear wheels (6) as shown in Figure 2, (col. 3, lines 2-62). It is noted that the auxiliary change speed lever (25) is connected to the differential (14) to the rear wheels (6) and not to the engine (1).

The Ushiro et al. reference cannot anticipate the embodiment of the invention recited in claim 1 for several reasons. First, the Ushiro et al. reference teaches a **tractor** as shown in Figure 1, and does not teach, or even suggest, a "combine harvester," which is the subject matter of claim 1. The Webster's New Twentieth Century Dictionary, 2nd edition, p. 360, defines a "combine" as a "type of threshing machine having a harvesting apparatus attached to it." The common meaning of the preamble distinguishes it as a type of threshing machine, which is different from a tractor. To make it even more explicit that the subject matter of claim 1 is directed to a "combine" that is a threshing-type machine, the preamble of claim 1 now recites a "combine harvester, including a threshing, cleaning and separation system."

Courts have ruled that when the preamble is necessary to give like, meaning and vitality to the claim, then the preamble limits the invention. Catalina Marketing International v. Coolsavings.com Inc., 62 USPQ2d 1781, 1783 (Fed. Cir. 2002); Eaton Corp. v. Rockwell International Corp., 66 USPQ2d 1271. To determine when this occurs, courts have held that the preamble further defines the invention when (a) Jepson claiming generally indicates intent to use the preamble to define the claimed invention, (b) when the claim drafter chooses to use both the preamble and the body to define the subject matter of

the claimed invention, or (c) when clear reliance on the preamble during prosecution is used to distinguish the claimed invention from the prior art. Catalina Marketing International v. Coolsavings.com Inc., 62 USPQ2d 1781, 1784 (Fed. Cir. 2002).

In the present case, claim 1 now specifically recites a "threshing, cleaning and separation system." However, even without this now explicitly recited feature in the base claim, the very nature of the word "combine" limits the invention to threshing-type machines and this issue was argued and relied upon in Amendment (A), filed February 5, 2003, to distinguish over the prior art. Therefore, under the conditions set forth in Catalina Marketing, claim 1 is not anticipated by the Ushiro et al. reference because the reference is directed to "tractors" and not to "combine harvesters" as claimed.

Of course, this is not the only deficiency in the Ushiro et al. reference. The Ushiro et al. reference does not teach an "engine control circuit" in accordance with the present invention. Specifically, the present invention, as recited in claim 1, is a "combine harvester" that includes (a) wheels, (b) an engine connected to a transmission that includes a gear select lever, (c) a throttle control switch, (d) a speed modification switch, and (e) an engine control circuit connected to receive input from the throttle control switch and the speed modification switch, wherein the engine control circuit is responsive to the input so as to control the engine speed. The "engine control circuit" in accordance with the present invention is a separate element. However, the Ushiro et al. reference teaches no such element. The Examiner argues that "Fig. 3" of the Ushiro et al. reference is an "engine control circuit" (Office Action, dated April 24, 2003, page 2, line 20). In this case, the Ushiro et al. reference teaches that the foot pedal (24), the auxiliary change speed lever (25), and the hand accelerator lever (21) are components of the "engine control circuit,"

whereas the present invention requires that the throttle control switch, the speed modification switch, and the engine control circuit are all separate elements as claimed.

Another deficiency of the Ushiro et al. reference is that the auxiliary change speed lever (25) is not equivalent to the "gear select lever" in accordance with the present invention. The present invention according to claim 1 requires that "movement of the gear select lever from a first position to a second position switches the speed modification switch from the first state to the second state and changes the gear ratio" so that the engine runs "at a first speed for a given position of said throttle control when said speed modification switch is in said first state and to run at a second speed higher than said first speed when said throttle control is in said given position and said speed modification switch is in said second state." This claimed structural relationship is not taught by the Ushiro et al. reference.

Ushiro's auxiliary change speed lever (25) is operable to control the auxiliary change speed device (12) that is connected through a differential (14) to rear wheels (16). Furthermore, lever (25) is connected to an interlocking device so that when lever (25) is in a high speed position (H), inner wire (28a) is in an interlocking state with release wire (28), whereas when lever (25) is in positions (M) or (L), then inner wire (28a) and release wire (28) are in the non-interlocking state (col. 3, lines 3-12, lines 30-68, and col. 4, lines 1-3). The locking and non-locking states influence the effect of foot pedal (24) as evident from Figure 3; however, depressing the foot pedal (24) forward to (F) is still required to increase the rotational rate of the engine (1) when lever (25) is in position (H) and inner wire (28a) and (28) are in the locking state (col. 4, lines 4-14). In other words, if moving lever (25) from position (H) to either position (M) or (L) is construed to switch foot pedal

(24), inner wire (28a) and release wire (28) between the locking state (i.e., first state) and the non-locking state (i.e., second state), one skilled in the art would realize that there is no controlled change of the engine's speed when switching between the locking state and the non-locking state while the hand accelerator (21) is in a given set position.

This is different from the present invention which requires that the engine "run at a **first speed** for **a given position** of said throttle control when said speed modification switch is in said **first state** and to run at a **second speed** higher than said first speed when said throttle control is **in said given position and said speed modification switch is in said second state.**" In other words, lever (25) taught by Ushiro is not equivalent to the "gear shift lever" in accordance with the present invention because lever (25) cannot affect engine speed by shifting between non-locking and locking states. This shifting, as taught by Ushiro, merely affects how foot pedal (24) operates and does not directly switch the foot pedal to the forward (F) position to effect a higher rate of engine speed.

To summarize, the Ushiro et al. reference fails to anticipate the subject matter of claim 1 because (1) it does not teach a "combine harvester," (2) it does not teach a "threshing, cleaning and separation system, " (3) it does not teach a separate "engine control circuit," and (4) the "auxiliary change speed lever" (25) is not equivalent in operation to the "gear shift lever" of the present invention.

The Cornell et al. reference discloses "an automatic power control for variable power train" installed in an agricultural vehicle, specifically a tractor (col. 1, lines 25-33, col. 3, lines 61-64). Cornell et al. disclose that the tractor includes a hydromechanical speed transmission (20) and a three-speed reversible range transmission (28), (see Figure 1). Speed transmission (20) is controlled indirectly by speed lever (22) via control module

(24) and electrical hydraulic actuator (26). An automatic power lever (18) is provided and it appears to operate as a throttle (col. 8, lines 17-21), whereas speed lever (22) appears to effect gear reduction (col. 8, lines 22-31).

However, Cornell et al. teach that a separate range transmission (28) is provided to operate wheels (14) and that a gear shift lever (30) is a mechanical mechanism for changing gears (col. 6, lines 26-37). Microswitch (133) is provided to indicate the position of lever (30), but there is no input from transmission (28) to control module (24), (col. 7, lines 45-58).

Consequently, the Cornell et al. reference does not teach, or even suggest, a "combine harvester" that has "a speed modification switch having a first state and a second state, wherein movement of the gear select lever from a first position to a second position switches the speed modification switch from the first state to the second state **and** changes the gear ratio" as recited in claim 1. Furthermore, the reference teaches that the lever for changing gears of a transmission for rotating the wheels is not associated with a speed modification switch as required in claim 1.

Thus, the Cornell et al. reference fails to make up several of the deficiencies of the Ushiro et al. reference. Specifically, the Ushiro et al. reference and the Cornell et al. reference fails to teach, or even suggest, alone or in combination, (1) a combine harvester, (2) a threshing, cleaning and separation system, and (3) a "gear shift lever" constructed to operate as claimed in claim 1.

Applicant makes several additional comments regarding the Examiner's rejection. The Examiner states that "[i]t is notorious in mechanized agriculture that agricultural tractors are the plenary power source: any working attachment can be provided for the

tractor, including a combine attachment" (Office Action, dated April 24, 2003, page 4, lines 16-21), which lends to the appearance of an "Official Notice" in accordance with MPEP 2144.03. Applicant's traverse the Examiner's Official Notice on the grounds that the teaching is vague and the Examiner has not shown a proper justification for selecting a "combine attachment," or that attaching such a device would produce a "combine harvester" and not just a tractor connected to a combine attachment.

Applicant also notes that the Examiner admits that neither Ushiro et al., nor Cornell et al., teach that "data stored and accessed includes work speed and road speed values corresponding to positions of throttle control" as required by claims 3, 4 and 6 (Office Action, dated April 24, 2003, page 3, lines 20-23). In fact, Cornell et al. teach that "**the control module does not directly affect the PTO output**" (col. 28, lines 49-68, emphasis added), and explains that power take-off ("PTO") is controlled indirectly as the engine control module operates to maintain a constant engine speed or a provide a constant PTO power that may result in the engine operating "in the less fuel efficient speed mode during a larger portion of its operating cycle" (col. 29, lines 31-50). Therefore, Cornell et al. teach a control module that maintains a constant PTO speed or power, which would increase fuel consumption and defeat the purpose of the present invention. In other words, the Cornell et al. reference teaches away from the use of work and speed tables for optimizing fuel efficiency as taught by the present invention (instant specification, page 7, line 4, to page 8, line 20).

The Examiner argues that one of ordinary skill in the art would program the microprocessor of the engine control circuit to perform the desired function. The Examiner provides no evidence to support this position.

Courts have held that, in order to justify a rejection under 35 U.S.C. 103, the prior art must (1) have suggested to those of ordinary skill in the art that they should make the claimed device, (2) that the prior art has revealed a reasonable expectation of success to those skilled in the art when so making the claimed device, and (3) both the suggestion and the reasonable expectation of success are founded in the prior art and not in the applicant's disclosure. In re Vaeck, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991). Furthermore, courts have ruled that patentable claims may consist of all old elements when the combination of old elements is novel, or patentable claims may consist of all old elements and at least one new element. Clearstream Wastewater Systems Inc. v. Hydro-Action Inc., 54 USPQ2d 1185, 1189 (Fed. Cir. 2000).

In the present case, Ushiro et al. disclosed a tractor having a mechanical engine control and Cornell et al. discloses a tractor having an electromechanical engine control. The combination of these two references fails to teach, or even suggest, a "combine harvester," and "a threshing, cleaning and separation system," and a "gear select lever" constructed to operate as recited in claim 1. Furthermore, neither reference teaches, or even suggests, the "means for storing" that stores "work speed values" and "at least one road speed value" as recited in claim 3. In fact, the Cornell et al. reference teaches away from an engine control that directly controls PTO power or speed, which is a fact further nullifying any justification for combining these references.

There is no justification to combine the prior art references in the manner that the Examiner suggests because the combination of the art does not teach all of the claimed features of the invention, and with respect to claim 3, the prior art actually teaches away from directly controlling PTO power or speed using tabulated engine control data.

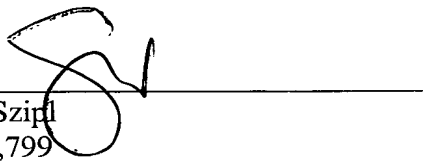
Conclusion

Applicant has shown that the Ushiro et al. reference does not anticipate the subject matter of claim 1 because Ushiro et al. does not teach a "combine harvester," does not teach a "threshing, cleaning and separation system," does not teach an "engine control circuit" as a separate element, and does not teach, or even suggest, "a speed modification switch having a first state and a second state, wherein movement of the gear select lever from a first position to a second position switches the speed modification switch from the first state to the second state and changes the gear ratio" so that the engine runs "at a first speed for a given position of said throttle control when said speed modification switch is in said first state and to run at a second speed higher than said first speed when said throttle control is in said given position and said speed modification switch is in said second state" as recited in claim 1. The Cornell et al. reference cannot make up all of these deficiencies; therefore, the rejection standing against the claims is untenable and should be withdrawn.

For this and all of the above reasons, claims 1-6 are in condition for allowance and a prompt notice of allowance is earnestly solicited.

Questions are welcomed by the below signed attorney for the Applicant.

Respectfully submitted,
GRIFFIN & SZIPL, PC



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